Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade K			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	OH	MA.K.2.A	Explain the need for standard units of measure.
Finding the Center of Gravity Using Rulers	OH	MA.K.6.E	Explain to others how a problem was solved.
Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 1			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	OH	MA.1.2.A.1	Recognize and explain the need for fixed units and tools for measuring length and weight; e.g., rulers and balance scales.
Finding the Center of Gravity Using Rulers	OH	MA.1.6.E	Explain to others how a problem was solved.
Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 2			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	OH	MA.2.2.A	Explain the need for standard units of measure.
Finding the Center of Gravity Using Rulers	OH	MA.2.2.D.6	Select and use appropriate measurement tools; e.g., a ruler to draw a segment 3 inches long, a measuring cup to place 2 cups of rice in a bowl, a scale to weigh 50 grams of candy.
Finding the Center of Gravity Using Rulers	OH	MA.2.6.E	Explain to others how a problem was solved.
Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 3			
Activity/Lesson	**State**	**Standards**	

Finding the Center of Gravity Using Rulers	OH	MA.3.2.D.6	Use appropriate measurement tools and techniques to construct a figure or approximate an amount of specified length, weight or volume (capacity); e.g., construct a rectangle with length 2½ inches and width 3 inches, fill a measuring cup to the ¾ cup mark.
Finding the Center of Gravity Using Plumb Lines	OH	MA.3.2.D.6	Use appropriate measurement tools and techniques to construct a figure or approximate an amount of specified length, weight or volume (capacity); e.g., construct a rectangle with length 2½ inches and width 3 inches, fill a measuring cup to the ¾ cup mark.
Changing the Center of Gravity Using Moment Arms	OH	MA.3.2.D.6	Use appropriate measurement tools and techniques to construct a figure or approximate an amount of specified length, weight or volume (capacity); e.g., construct a rectangle with length 2½ inches and width 3 inches, fill a measuring cup to the ¾ cup mark.
Changing the Center of Gravity Using Moment Arms	OH	MA.3.6.A	Apply and justify the use of a variety of problem-solving strategies; e.g., make an organized list, guess and check.
Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 4			
Activity/Lesson	**State**	**Standards**	
Finding the Center of Gravity Using Rulers	OH	MA.4.6.J	Read, interpret, discuss and write about mathematical ideas and concepts using both everyday and mathematical language.
Finding the Center of Gravity Using Plumb Lines	OH	MA.4.4.A.2	Represent and analyze patterns and functions using words, tables and graphs.
Finding the Center of Gravity Using Plumb Lines	OH	MA.4.4.D.2	Represent and analyze patterns and functions using words, tables and graphs.
Finding the Center of Gravity Using Plumb Lines	OH	MA.4.4.E.4	Use rules and variables to describe patterns and other relationships.
Finding the Center of Gravity Using Plumb Lines	OH	MA.4.6.J	Read, interpret, discuss and write about mathematical ideas and concepts using both everyday and mathematical language.
Changing the Center of Gravity Using Moment Arms	OH	MA.4.6.A	Apply and justify the use of a variety of problem-solving strategies; e.g., make an organized list, guess and check.
Changing the Center of Gravity Using Moment Arms	OH	MA.4.6.J	Read, interpret, discuss and write about mathematical ideas and concepts using both everyday and mathematical language.

Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 5			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	OH	MA.5.4.L.6	Describe how the quantitative change in a variable affects the value of a related variable; e.g., describe how the rate of growth varies over time, based upon data in a table or graph.
Jet Propulsion	OH	MA.5.6.J	Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.
Vectoring	OH	MA.5.2.C.7	Use benchmark angles (e.g.; 45°, 90°, 120°) to estimate the measure of angles, and use a tool to measure and draw angles.
Vectoring	OH	MA.5.4.F.5	Model problems with physical materials and visual representations, and use models, graphs and tables to draw conclusions and make predictions.
Vectoring	OH	MA.5.4.K.5	Model problems with physical materials and visual representations, and use models, graphs and tables to draw conclusions and make predictions.
Vectoring	OH	MA.5.5.G	Evaluate conjectures and predictions based upon data presented in tables and graphs, and identify misuses of statistical data and displays.
Vectoring	OH	MA.5.6.H	Use representations to organize and communicate mathematical thinking and problem solutions.
Vectoring	OH	MA.5.6.J	Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.
Center of Gravity, Pitch, Yaw	OH	MA.5.1.B.3	Identify and generate equivalent forms of fractions, decimals and percents.
Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 6			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	OH	MA.6.6.H	Use representations to organize and communicate mathematical thinking and problem solutions.
Jet Propulsion	OH	MA.6.6.J	Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.

Vectoring	OH	MA.6.6.H	Use representations to organize and communicate mathematical thinking and problem solutions.
Vectoring	OH	MA.6.6.J	Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.
Center of Gravity, Pitch, Yaw	OH	MA.6.1.I.11	Perform fraction and decimal computations and justify their solutions; e.g., using manipulatives, diagrams, mathematical reasoning.
Fuel Efficiency	OH	MA.6.4.C.5	Produce and interpret graphs that represent the relationship between two variables.
Fuel Efficiency	OH	MA.6.4.K.5	Produce and interpret graphs that represent the relationship between two variables.
Fuel Efficiency	OH	MA.6.5.D.3	Compare representations of the same data in different types of graphs, such as a bar graph and circle graph.
Fuel Efficiency	OH	MA.6.5.G.6	Make logical inferences from statistical data.
Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 7			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	OH	MA.7.6.H	Use representations to organize and communicate mathematical thinking and problem solutions.
Jet Propulsion	OH	MA.7.6.J	Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.
Vectoring	OH	MA.7.5.C	Evaluate interpretations and conclusions as additional data are collected, modify conclusions and predictions, and justify new findings.
Vectoring	OH	MA.7.5.K.8	Make predictions based on theoretical probabilities, design and conduct an experiment to test the predictions, compare actual results to predicted results, and explain differences.
Vectoring	OH	MA.7.6.H	Use representations to organize and communicate mathematical thinking and problem solutions.
Vectoring	OH	MA.7.6.J	Communicate mathematical thinking to others and analyze the mathematical thinking and strategies of others.
Fuel Efficiency	OH	MA.7.1.F	Apply number system properties when performing computations.

Fuel Efficiency	OH	MA.7.4.B.1	Represent and analyze patterns, rules and functions with words, tables, graphs and simple variable expressions.
Fuel Efficiency	OH	MA.7.4.G.1	Represent and analyze patterns, rules and functions with words, tables, graphs and simple variable expressions.
Fuel Efficiency	OH	MA.7.4.J.8	Use formulas in problem-solving situations.
Exploring the Extreme			
2003 Mathematics			
Academic Content Standards			
Ohio Mathematics			
Grade 8			
Activity/Lesson	**State**	**Standards**	
Jet Propulsion	OH	MA.8.6.H	Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.
Vectoring	OH	MA.8.6.G	Write clearly and coherently about mathematical thinking and ideas.
Vectoring	OH	MA.8.6.H	Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.
Center of Gravity, Pitch, Yaw	OH	MA.8.1.G.5	Determine when an estimate is sufficient and when an exact answer is needed in problem situations, and evaluate estimates in relation to actual answers; e.g., very close, less than, greater than.
Center of Gravity, Pitch, Yaw	OH	MA.8.1.G.6	Estimate, compute and solve problems involving rational numbers, including ratio, proportion and percent, and judge the reasonableness of solutions.
Fuel Efficiency	OH	MA.8.1.G.5	Determine when an estimate is sufficient and when an exact answer is needed in problem situations, and evaluate estimates in relation to actual answers; e.g., very close, less than, greater than.
Fuel Efficiency	OH	MA.8.1.G.6	Estimate, compute and solve problems involving rational numbers, including ratio, proportion and percent, and judge the reasonableness of solutions.
Fuel Efficiency	OH	MA.8.2.A.6	Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs.
Fuel Efficiency	OH	MA.8.2.F.6	Solve and determine the reasonableness of the results for problems involving rates and derived measurements, such as velocity and density, using formulas, models and graphs.

Fuel Efficiency	OH	MA.8.4.D.7	Use symbolic algebra (equations and inequalities), graphs and tables to represent situations and solve problems.
Fuel Efficiency	OH	MA.8.4.D.8	Write, simplify and evaluate algebraic expressions (including formulas) to generalize situations and solve problems.
Fuel Efficiency	OH	MA.8.4.F.7	Use symbolic algebra (equations and inequalities), graphs and tables to represent situations and solve problems.
Fuel Efficiency	OH	MA.8.5.A.1	Use, create and interpret scatterplots and other types of graphs as appropriate.